



# Design Characteristics

# The Anatomy of Hand Tools

Prepared by Fairmount Tool & Forging, Inc., to present the design characteristics essential to the economy of quality in fine hand tools humorously illuminated by cartoons of Jim Williams — he helped American working men to see themselves and enjoy what they saw.

DESIGN CHARACTERISTICS

**The Anatomy of Hand Tools — Design Characteristics.** The plates in this portfolio feature Design Characteristics of Hand Tools and have been carefully prepared by Fairmount to illustrate and describe the wide variety of styles from which craftsmen, purchasing agents and students may choose.

The matter of hand tool design has benefited from the concentrated attention of our entire industry. Thus, there is reason and purpose back of every basic hand tool design variation.

Among the objectives of the designers has been to make each tool most workable for specific jobs tackled by craftsmen. These efforts reflect themselves in making work easier, saving time and frustration and improving the safety factor of the tool.

Fairmount has been both designer and manufacturer of quality hand tools since 1917. When you purchase a Fairmount Tool, you may do so with confidence that you are receiving the maximum benefits of Fairmount's famous Economy of Quality.

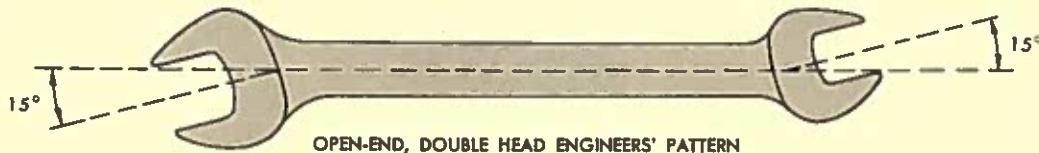
The plates herewith may be filed within this cover for constant reference or framed for wall hanging. Each has been illuminated by a cartoon from the pen of Jim Williams, whose work has done so much to make American craftsmen see themselves as they really are and enjoy what they see.

Fairmount Tool & Forging, Inc.  
10611 Quincy Avenue  
Cleveland 6, Ohio



# One-Piece Wrenches

## DESIGN CHARACTERISTICS

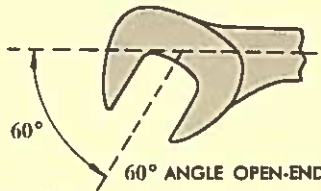


OPEN-END, DOUBLE HEAD ENGINEERS' PATTERN

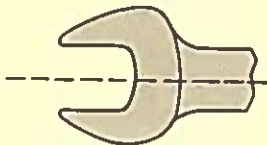
"Old Faithful" of one-piece wrench design. Most popular angled openings, 15° and 22½°. Others include 7½°, 45°, 60° and 75° angled openings and combinations.



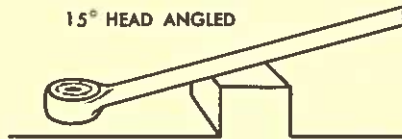
22½° ANGLE OPEN-END



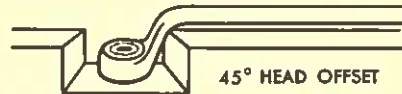
60° ANGLE OPEN-END



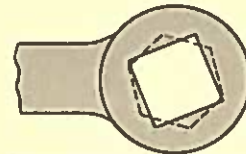
STRAIGHT OPEN-END



15° HEAD ANGLED

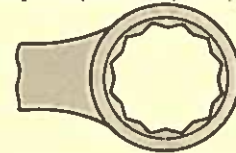


45° HEAD OFFSET

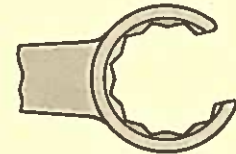


BOX OPENING — CARBON STEEL

Hex (dotted line) — 15°  
Square (solid line) — 22½°

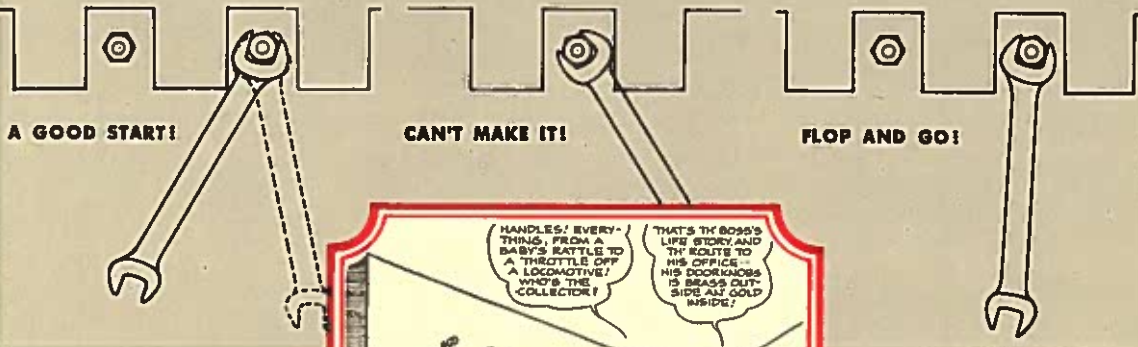


BOX OPENING — SELECTED ALLOY STEEL, Thin Wall — 6-pt. and 12-pt. openings.



FLARE NUT OPENING — (Open-End Box) 6-pt. and 12-pt. openings.

### WHY OPENINGS ARE ANGLED



PREPARED BY FAIRMOUNT TOOL & FORGING, INC., TO PRESENT THE DESIGN CHARACTERISTICS ESSENTIAL TO THE ECONOMY OF QUALITY IN FINE HAND TOOLS.

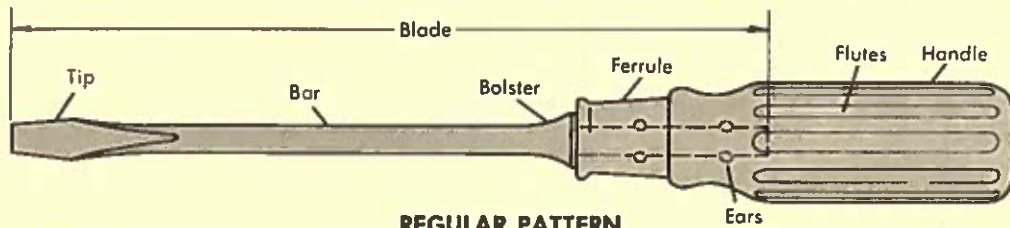


THE MAKIN'S

A cartoon by Jim Williams — he helped American working men to see themselves and enjoy what they saw.

# Screw Drivers

## DESIGN CHARACTERISTICS



### REGULAR PATTERN

The Regular Pattern flared tip screw driver is also made with a square blade. The bolster strengthens the blade against prying strains and resists pounding.



SLOTTED HEAD  
CABINET PATTERN



PHILLIPS HEAD



CLUTCH HEAD

The Cabinet Pattern will follow countersunk screws without marring work and is also popular for electrical and machine work. Phillips and Clutch Head patterns were designed for power driven screw drivers and are generally used for speedy assembly by manufacturers.

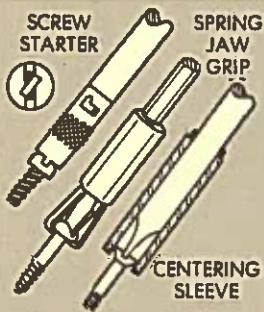


COMPOSITE BOLSTER

permits full blade temper and better handle insulation.



THROUGH HANDLE BLADE



A turning center blade or flexible spring jaws hold the screw firmly to set or remove screws in hard-to-get-at places. A centering sleeve to align the blade tip in the screw slot is a spiral ratchet screw driver accessory.

Screw drivers to tighten or loosen screws in tight places are made in a variety of types and sizes. The Close Quarter, Stubby, Offset and Close Quarter Ratchet are also made for Phillips Head screws.

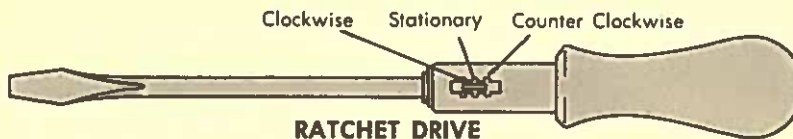


CLOSE  
QUARTER

STUBBY



SPIRAL DRIVE



RATCHET DRIVE



SPIRAL DRIVE BIT

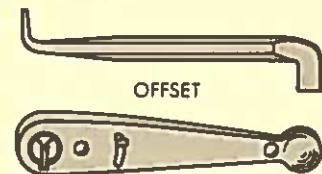


BRACE BIT

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THE DIPLOMA



OFFSET

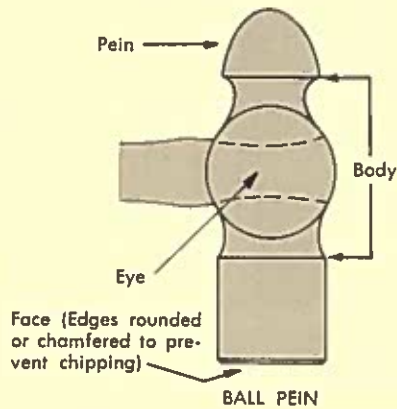
CLOSE QUARTER RATCHET

A cartoon by Jim Williams — he helped American working men to see themselves and enjoy what they saw.

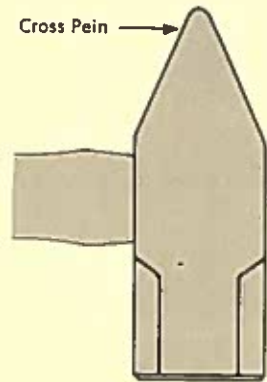


# Hammers

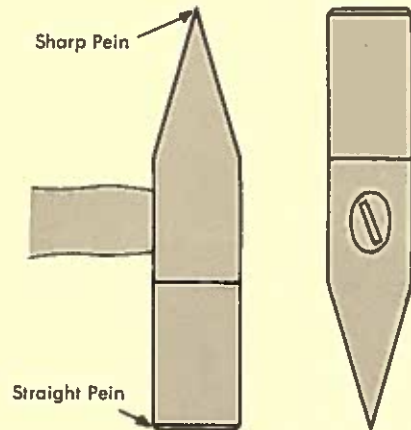
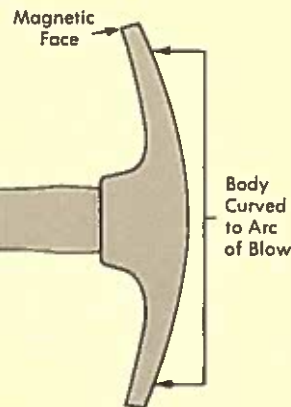
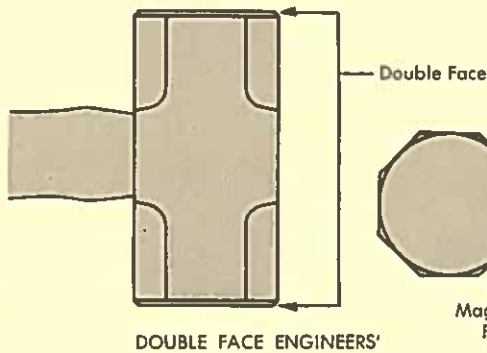
## DESIGN CHARACTERISTICS



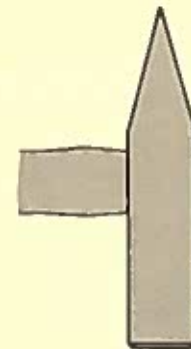
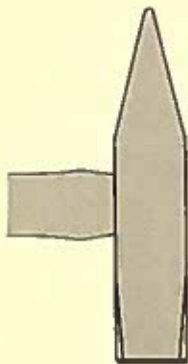
The Hammers illustrated on this page demonstrate many of the features of fine hammer design resulting from a thorough knowledge of end usage. In addition to peins and faces, a vital consideration of the designer is balance — the exact positioning of the eye and handle for most effective use.



ENGINEERS' CROSS PEIN



SCALING



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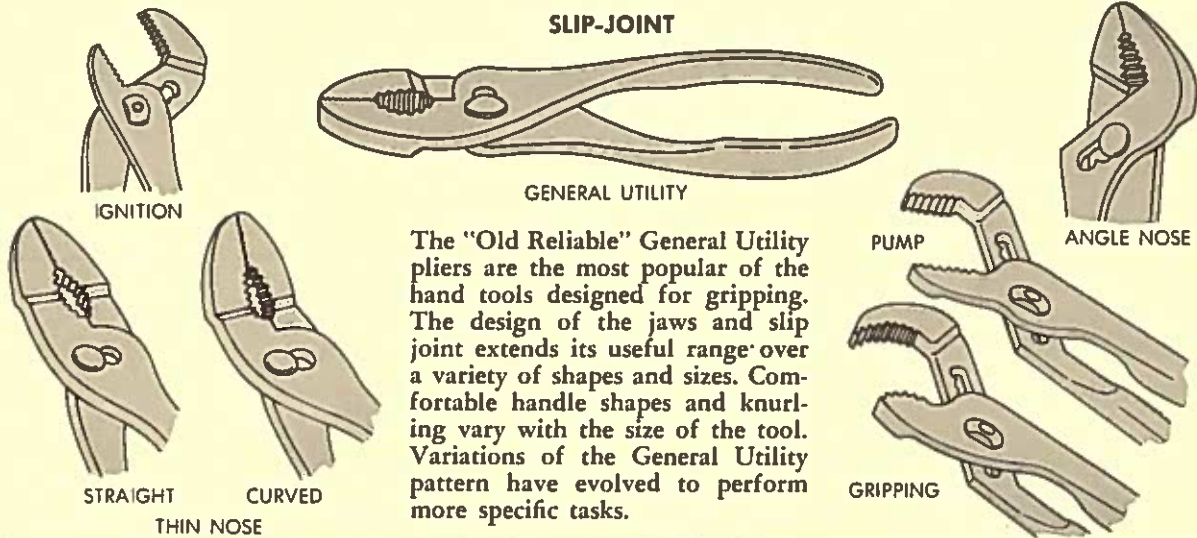


A cartoon by Jim Williams — he helped American working men to see themselves and enjoy what they saw.

# Pliers

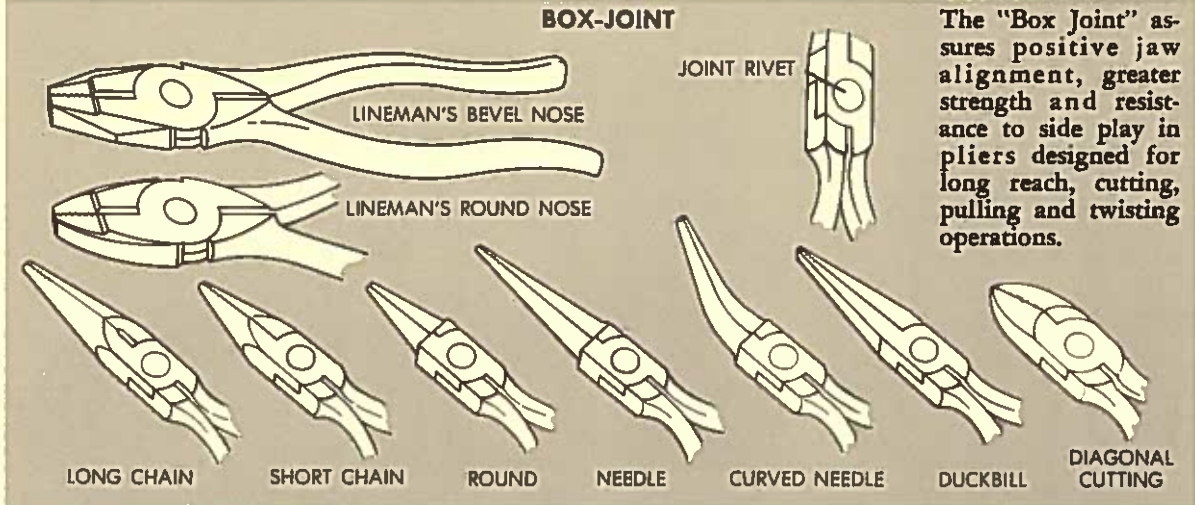
## DESIGN CHARACTERISTICS

### SLIP-JOINT



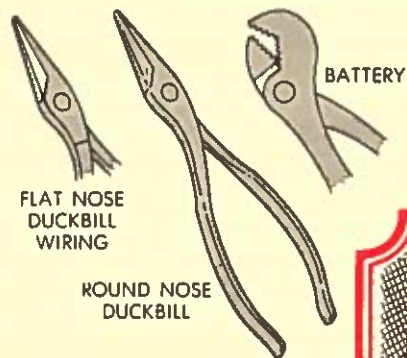
The "Old Reliable" General Utility pliers are the most popular of the hand tools designed for gripping. The design of the jaws and slip joint extends its useful range over a variety of shapes and sizes. Comfortable handle shapes and knurling vary with the size of the tool. Variations of the General Utility pattern have evolved to perform more specific tasks.

### BOX-JOINT



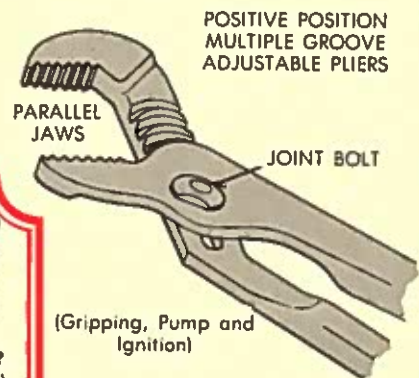
The "Box Joint" assures positive jaw alignment, greater strength and resistance to side play in pliers designed for long reach, cutting, pulling and twisting operations.

### LAP-JOINT

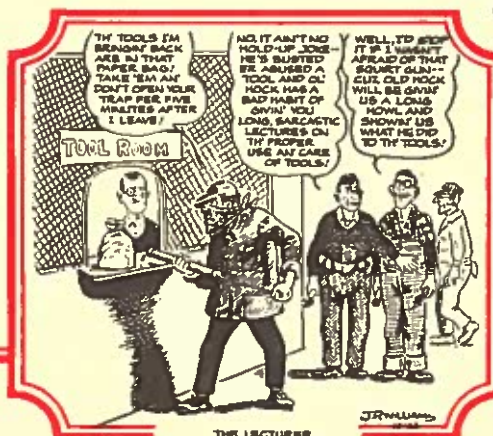


The "Positive Position Multiple Groove Adjustable Pliers" combine high joint strength, quick adjustment and parallel jaw alignment for maximum utility.

### GROOVE-JOINT



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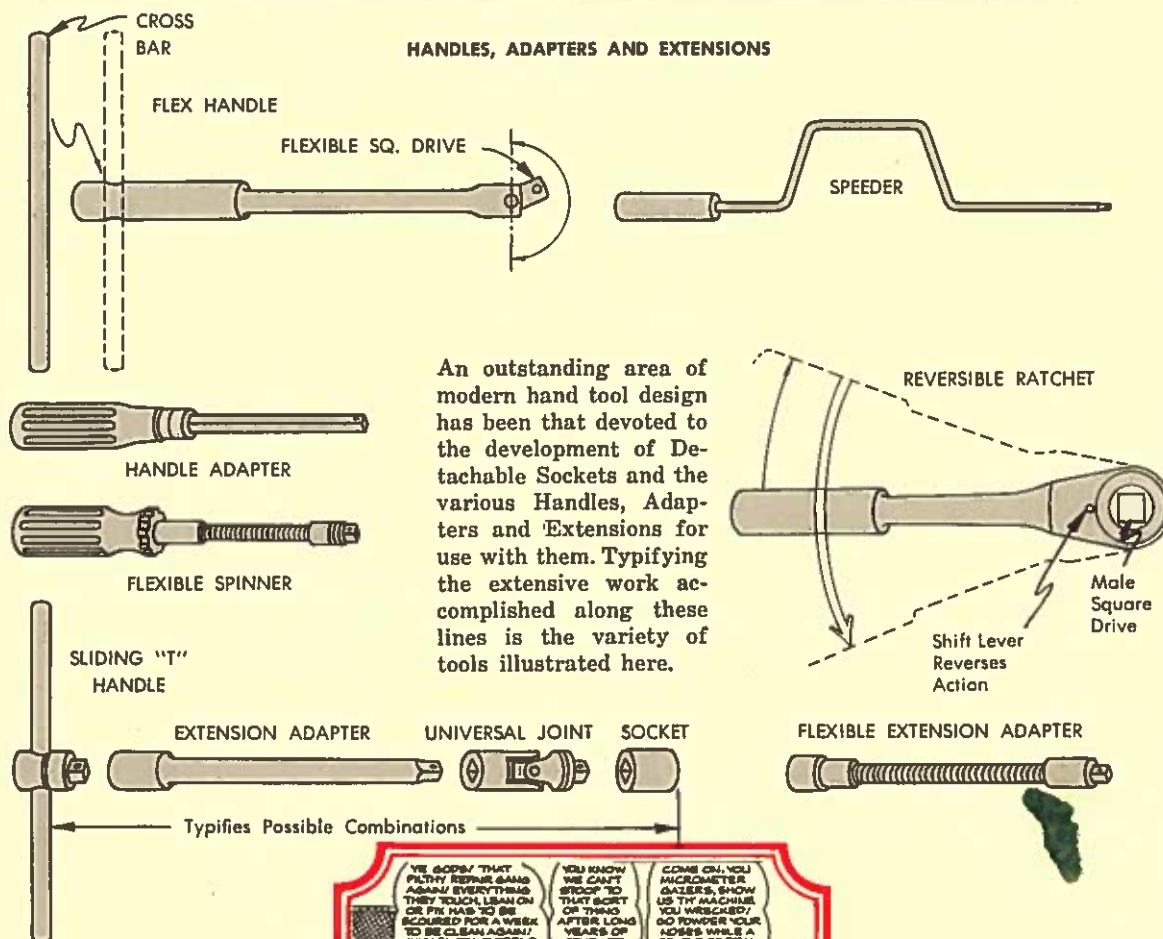
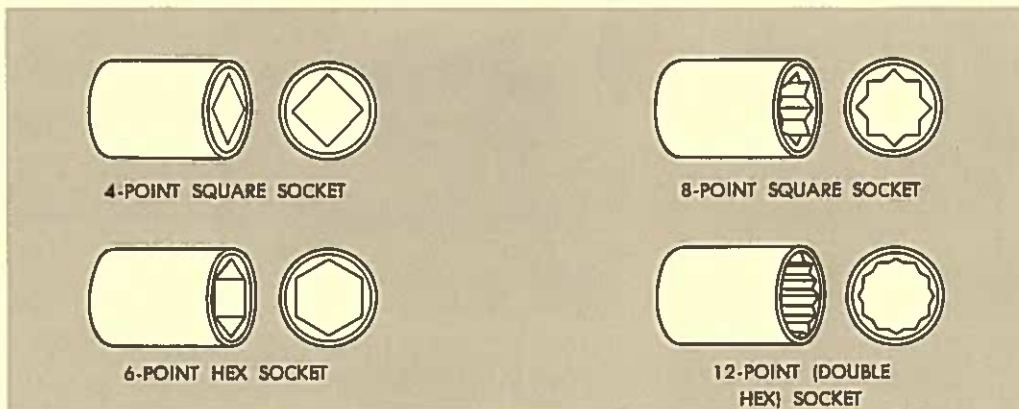


A cartoon by Jim Williams — he helped American working men to see themselves and enjoy what they saw.



# Detachable Sockets

## DESIGN CHARACTERISTICS



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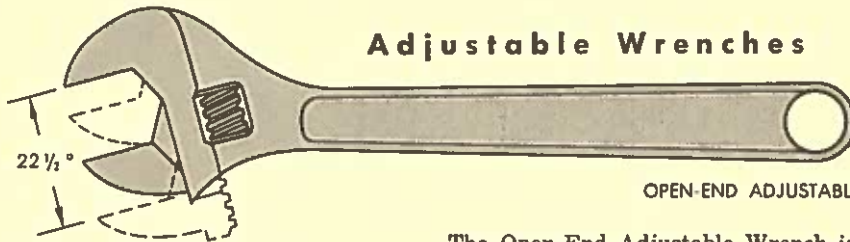


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# Adjustable and Torque Wrenches

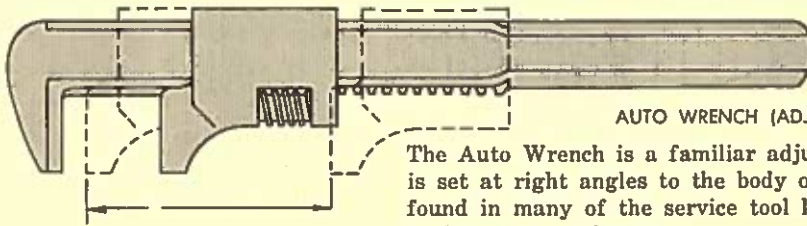
## DESIGN CHARACTERISTICS

### Adjustable Wrenches



OPEN-END ADJUSTABLE WRENCH

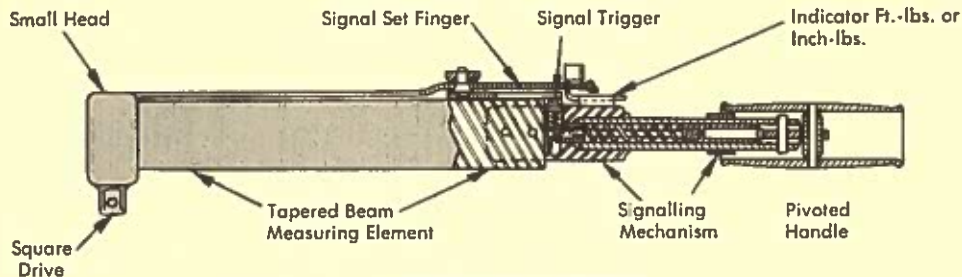
The Open-End Adjustable Wrench is uncomplicated, consisting of only the body containing the fixed jaw, the adjustable jaw, a knurl, pin and spring. Since its action must prevent "slipping," precision manufacturing of these parts is requisite.



AUTO WRENCH (ADJUSTABLE)

The Auto Wrench is a familiar adjustable type. Its opening is set at right angles to the body of the wrench. It will be found in many of the service tool kits supplied by original equipment manufacturers.

### Torque Wrenches



SENSORY SIGNALLING TYPE

Torque Wrenches are designed to inform the user of the exact degree of Torque (twisting stress) applied to the nut or bolt. They are essential wherever balanced adjustments for friction-free operation are required. Measurement is registered in foot-pounds or inch-pounds and a variety of methods such as indicators, converging scales and dials are employed to provide these readings. Two popular Torque Wrenches are shown here. The upper illustration shows the pre-set Sensory Signalling type with Indicator. Lower right is standard Indicator type giving a visual reading without a pre-setting signalling mechanism.



VISUAL INDICATOR TYPE

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THE OIL BATHS

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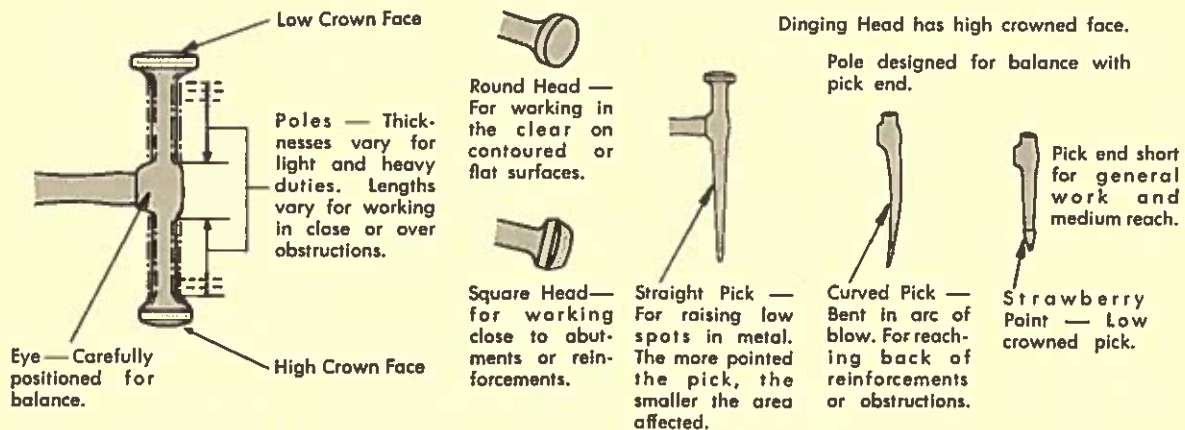


# Metal Working Tools

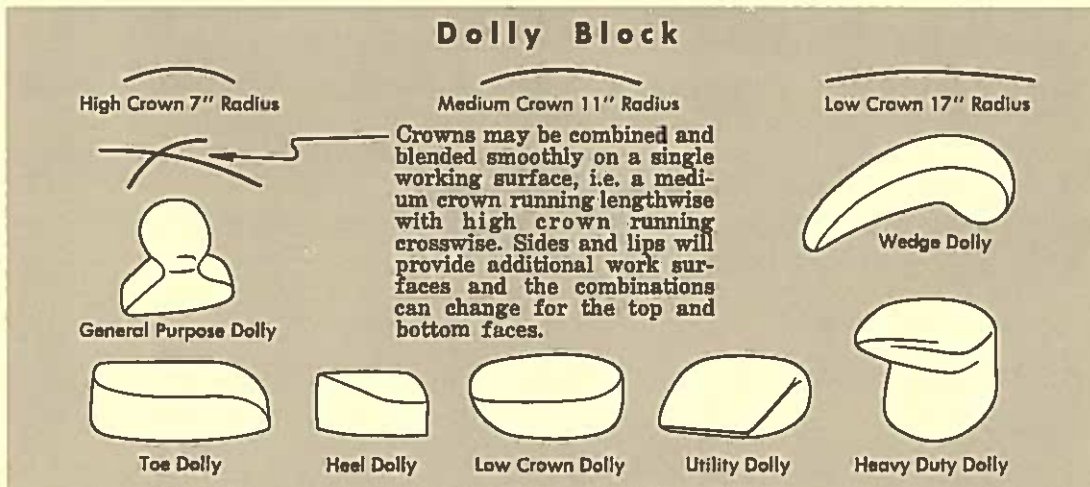
## DESIGN CHARACTERISTICS

### Hammers

(Body and Fender Repair)

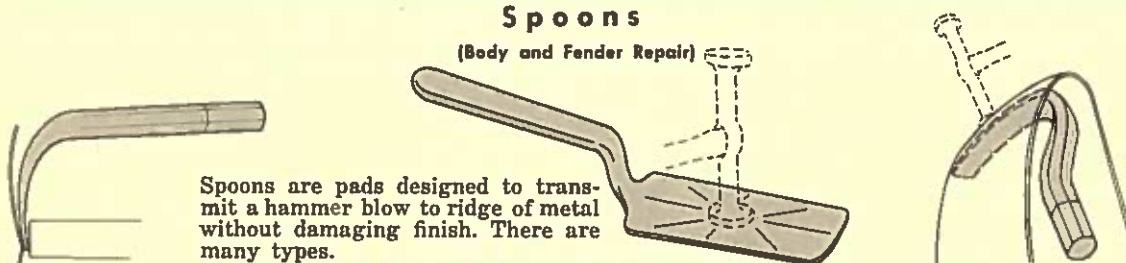


### Dolly Block



### Spoons

(Body and Fender Repair)



Rugged, heavy Spoons will serve as pry tools.

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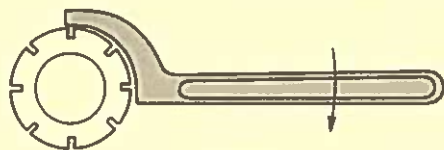
Certain Spoons with handles may be used as Dolly Blocks in hard-to-reach places. These are called Spoon-Dollies.

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# Spanners and Hex Key Wrenches

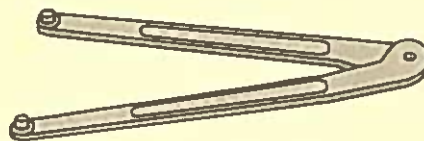
## DESIGN CHARACTERISTICS

### SPANNERS



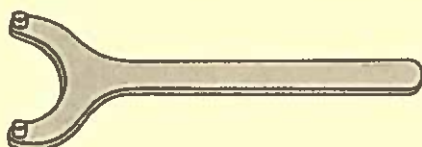
PIN SPANNER

Provides single pin designed to be placed in one of the notches of a round nut or splined part.



ADJUSTABLE FACE SPANNER

Similar to Face Spanner but adjustable for general use where center-to-center dimensions vary.



FACE SPANNER

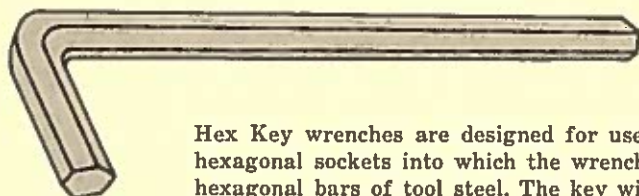
Provides two pins designed to fit in notches cut in face or periphery of nut or screw plug.



ADJUSTABLE HOOK SPANNER

Designed for adjusting collars, lock nuts, rings, etc. used on various types of machine tool equipment.

### HEX KEY SET SCREW WRENCHES



Hex Key  
Set Screw Wrench

Hex Male  
Detachable  
Socket



Hex Key wrenches are designed for use with set screws providing female hexagonal sockets into which the wrench is inserted. Most are "L" shaped, hexagonal bars of tool steel. The key width across the flats will vary from .035" to 1" and wrenches of this type are available in both long and short arm patterns—from 1 1/2" in the short series to 14 1/4" in the long. Also, there are hex male detachable units which may be used with standard Socket wrenches, Handles and Adapters for specialized set screw work.

PREPARED BY FAIRMOUNT TOOL & FORGING, INC., TO PRESENT THE DESIGN CHARACTERISTICS ESSENTIAL TO THE ECONOMY OF QUALITY IN FINE HAND TOOLS.



THE REBEL YELL

A cartoon by Jim Williams — he helped American working men to see themselves and enjoy what they saw.



### About the famous cartoonist James Robert Williams

The cartoons of J. R. Williams are a priceless contribution to our colorful Americana. Among his most famous series is "Out Our Way," including "Worry Wart," "Why Mothers Get Gray," "Bull of the Woods" and his cartoons lampooning machine shop life. Others are "Life's Longest Moment," "Heroes are Born Not Made," "When You'd Love to Live Forever" and the Sunday color comic, "Out Our Way With the Willets." J. R. Williams was born in 1888. He passed away in June, 1957 leaving a world richer for his visit.



*Fairmount*

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